

B1
ent

present invention attached to a next-level substrate 140. Package 100 includes a flexible interposer 110 which is a substrate upon which an electronic device, for example, semiconductor chip 120, is attached. Contacts on the bottom face of chip 120 are directly connected to contacts 112 of interposer 110 by interconnections 124, which may be of solder or an electrically-conductive flexible adhesive. Where support for chip 120 in addition to that provided by connections 124 is desired, flexible dielectric underfill adhesive 126 is employed to fill the volume between chip 120 and interposer 110 that is not filled by flexible connections 124. Solderable contacts 114 on interposer 110 correspond to contacts 112 on the opposing surface thereof, and provide contacts for connections 134 between package 100 and conductors on next-level circuit substrate 140. Connections 134 may be conventional solder connections or electrically-conductive adhesive as in a ball grid array (BGA) package, and an underfill material is not required between package 100 and next-level substrate 140.

Paragraph beginning at page 8, line 29:

B2
cont'd

FIGURE 2 is a side cross-sectional schematic diagram of an alternative exemplary embodiment of an electronic package 100'' according to the present invention attached to a next-level substrate 140. Package 100'', like package 100, includes flexible interposer 110, and electronic device or chip 120 attached thereto, but with contacts on chip 120 connected to contacts 112' of interposer 110 by bond wires 125. Bond wires 124 are preferably fine gold or aluminum wires, such as are known and in widespread use in electrical devices. Contacts 112 may be formed of standard lead-frame metals, such as copper, nickel or kovar alloy, which and may also form a die-attach pedestal under chip 120 as well. Chip 120 is attached to flexible adhesive interposer 110 by a flexible or a rigid die-attach adhesive 126'. Interposer contacts 114 provide contacts for BGA solder or conductive adhesive connections 134 between package 100'' and conductors on next-level circuit substrate 140; without underfill. Lid 130 attached to interposer 110 provides mechanical protection

B3
end

for chip 120. An optional flexible adhesive pad 132 may be employed to provide added mechanical support and covering for chip 120, and optional metallic rim 118 may be provided for stiffening, all as described above.

Paragraph beginning at page 10, line 17:

B3

It is also noted that where lid 130 includes a pre-applied adhesive around the edges thereof that adhesively attach to flexible adhesive interposer 110, packages 100, 100" may be assembled in an in-line process, such as by standard pick-and-place component mounting equipment. While such lids 130 may be provided in several ways including by dispensing adhesive onto each lid or cover, or by applying an adhesive preform to each lid or cover, adhesive preform lids and covers as described in U.S. Patent No. 6,138,128 (U.S. Patent Application Serial Number 09/232,936 filed January 19, 1999) entitled "Method Of Making An Adhesive Preform Lid, As For An Electronic Device" and laminated adhesive lids and covers as described in U.S. Patent No. 6,409,859 (U.S. Patent Application Serial Number 09/337,453 filed June 21, 1999) entitled "Method Of Making A Laminated Adhesive Lid, As For An Electronic Device" which are expressly incorporated herein by reference in their entireties, are well suited to packages 100, and 100". With such low cost lids and covers and in-line processing, the cost of packages according to the present invention could be comparable to the cost of glob-top and molded encapsulation packages.

In the Drawing:

Please amend Figure 1 to add items 112 and the reference numeral 112 as marked in red on the copy thereof submitted herewith.

REMARKS

Claims 1-51 are pending in the captioned Application in which claims 16-30 and 32-36 are rejected, claim 31 is objected to and claims 1-15 and 37-51 are withdrawn by the Examiner in face of a restriction requirement.